

MIDWEST CENTER FOR OCCUPATIONAL HEALTH AND SAFETY

**SUMMARY ANNUAL REPORT
July 1, 2009 – June 30, 2010**

**NIOSH TRAINING GRANT
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**SUBMITTED BY:
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MIDWEST CENTER FOR OCCUPATIONAL HEALTH AND SAFETY (MCOHS)
EDUCATION AND RESEARCH CENTER - UNIVERSITY OF MINNESOTA
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Overview: The MCOHS (<http://www.mcohs.umn.edu>) continues to be extremely productive in a very supportive environment. There is extensive collaboration among disciplines, involving faculty, staff, students and external stakeholders engaged in teaching, research and outreach. Commitment to enhanced interdisciplinary involvement among the center programs further strengthens this center of excellence (<http://www.mcohs.umn.edu/>). The numerous funded active grants (n = 126, including 29 new grants), during the current period that supported student and faculty research, provided multidisciplinary opportunities for research training and dissemination of information through presentations, publications, and research-to-practice (r2p) efforts. There were a minimum of 96 publications, published or in-press (38 [40%], involving one or more faculty members and students, respectively) and at least 112 presentations at local, regional, national, and international meetings (25 [22%], involving one or more faculty members and students, respectively). **There were 55 MCOHS trainees during this reporting period (29 MPH, 7 MS, 1 MS/MPH, 18 PhD), including 15 new students and 15 graduates (3 PhD, 1 MS, 1 MS/MPH, and 10 MPH).**

Centerwide Activities: The MCOHS leadership together with the Executive Committee, Center Advisory Board, faculty, staff and students continued to facilitate the Center's strategic plan. A new method in formative evaluation of students' progress, "E-Portfolios," was presented and implemented on a trial basis during the last reporting period; this is now being modified to more readily facilitate development and assessment of professional competencies in occupational health and safety among the current and future trainees. Dr. McGovern and alumnae, Maura Boesch, DNP, MPH-MS, COHN-S are collaborating with Midwest Center for Occupational Health and Safety (MCOHS) program directors and other faculty to pilot test a one-credit course designed to create awareness of the field of occupational health and safety and recruit students into MCOHS graduate training programs. The initial offering of PubH 7200, *Introduction to Occupational and Environmental Health and Safety, "Does the Shoe Fit?"* is planned for 2011. The course participants will be introduced to key concepts in hazard recognition, evaluation, and control in occupational health and safety applied to a manufacturing population and environment through lectures, discussion, a case study, and tours of a leather tannery and shoe manufacturing plant. The weekly PubH 8120 Occupational Health and Safety Research Seminar, recently expanded to include all academic and research training programs in the MCOHS. This seminar facilitates progress on research efforts from initial study design and implementation to analyses and interpretation of data, by providing a forum involving students and faculty for presenting ongoing research, discussions and critiques, and practicing presentations of research results prior to professional meeting presentations. The MCOHS has initiated a fund development effort that, over the long term, will provide further supplemental funding for trainees.

Interdisciplinary, Outreach, and Research-to-Practice (r2p) Activities: Numerous outreach activities continued during the year; examples included: 1) Efforts to increase interaction with Training Project Grant faculty, University of Wisconsin-Stout, to further enhance continuing education and outreach efforts. 2) The MCOHS Centerwide Seminar Series, led by Dr. Bruce Alexander, has been very successful in providing cutting-edge presentations that attract MCOHS students, faculty, staff, advisory board members, and others from the University, community, and region. 3) The MCOHS convenes a major NORA Symposium each spring that includes research poster presentations by students and faculty; in April 2010, Dr. John Howard, Director of NIOSH, provided the keynote presentation for this symposium, "The Future of Work." MCOHS research funding provided numerous opportunities for interdisciplinary, outreach and r2p activities, both regionally and nationally, that are important to health and safety. Dr. Pat McGovern, Ms. Ruth Rasmussen, MPH, Ms. Anna Briggs, MPH (OHSRP doctoral trainee) are working with representatives of the Mountain and Plains ERC, NIOSH, and state health department partners in South and North Dakota to develop Indicators for Occupational Health Surveillance for the Dakotas as an outreach activity.

Recruitment and Diversity Efforts: Among 55 MCOHS registered students, students of color accounted for 25%. Integral to this increase are proactive strategies to ensure an inclusive, welcoming academic and work environment and emphases on both recruitment and retention. Dr. Gerberich, together with assistance from Mr. Rickey Hall, MCOHS Diversity Advisor, and Post-Doctoral Fellow, Dr. Starr Sage, developed a website link for MCOHS and the Environmental Health Sciences (EnHS) division on diversity information and resources that has been instrumental in attracting recent students (<http://www.mcohs.umn.edu/diversity/index.html>); this is frequently updated with involvement of the MCOHS Diversity Committee. The site provides information about on-campus, local, state, and national resources: funding; listservs; academic and social groups; various services; and statistics, among others. The MCOHS Diversity Committee has continued to meet to discuss and implement strategies for increasing program and all-center diversity, in consultation with the Executive Committee. Following the original baseline efforts, during the last reporting period, periodic surveys will be conducted to monitor perceptions of students, faculty and staff, pertinent to diversity issues that will, in turn, be utilized as a basis for future interventions, as appropriate. Faculty, students, and alumni continue to recruit locally and nationally at targeted events and major professional meetings.

Industrial Hygiene (IH) Program: Gurumurthy Ramachandran, PhD, Director (Enrolled students: 10 MPH, 4 MS, 6 PhD; Graduates: 2 MPH, 1 PhD) The overarching goal of the IH program is to provide a source of well-qualified, well-rounded professional industrial hygienists to meet the continuing needs of industry and society, both in the region served by the ERC and nationally. This period was very productive for the IH faculty and students in all categories; 22 peer-reviewed articles were published on various occupational health topics and 19 research presentations were delivered at several conferences, including the AIHCE in Denver, in 2010. Students and faculty received several awards. The IH faculty has been very successful in obtaining external grants from federal, state, and industry sources that provide important opportunities for masters' and doctoral students to conduct research projects and to obtain funding as research assistants. The faculty has also been active in numerous outreach efforts, thus, increasing the visibility of the IH program as well as the MCOHS, overall.

Occupational and Environmental Health Nursing (OEHN) Program: Patricia M. McGovern, PhD, and Nancy Nachreiner, PhD, Co-Directors (Enrolled students: 6 MPH, 1 MS/MPH, 1 PhD; Graduates: 3 MPH, 1 MS/MPH) This program continues to provide excellent interdisciplinary education in occupational health and safety for nurses, with the goal of creating a cadre of OEHNs that will work to decrease the nation's burden of occupational illness and injury and protect the health of its workforce. Faculty accomplishments included: 1) Based on nominations submitted by deans and chancellors, Dr. McGovern was appointed a *University of Minnesota Fellow for the Academic Leadership Program*, through the Committee on Institutional Cooperation for all Big-10 Universities, 2009-2010. This appointment enables enhancement of leadership/managerial skills of faculty who have demonstrated exceptional ability. Dr. Nancy Nachreiner was named Minnesota Occupational Health Nurse of the year, awarded the Edwards Excellence Award from the Minnesota Association of Occupational Health Nurses (MAOHN), and named to the Board of Directors for MAOHN. OEHN students also received national honors including: 1) Bryan Topp was inducted into Delta Omega, the Honorary Public Health Society; 2) Nellie Munn was one of two OHN students selected, nationwide, for an Occupational Health and Safety Administration (OSHA) summer internship; 3) Patricia Gannon interned with 3M Corporate Occupational Health Department to design, implement and pilot test a distance learning module on effective communications and conflict management for 3M's global nursing force.

Occupational and Environmental Medicine (OEM) Program, Jeffrey H. Mandel, MD, MPH, Director (Enrolled students: 10 MPH; Graduates: 4 MPH) The OEM program continues to demonstrate successful achievement of its goal of training physicians to improve the health and safety of workers. This is accomplished among a range of practice venues, including government agencies, corporate health departments, clinical practice and academia. Two new residents began their training during the 2009-2010 academic year: Dr. Allen Hassen and Dr. Pei Mi. Three residents completed training during this year (Drs. Brenzie, Ayub and Hall). All three are contemplating clinical practices. Three additional residents are beginning the 2010-2011 academic year and two residents will be graduating from the program later in 2010. Multidisciplinary research activities have continued to evolve. Dr. Mandel is the PI for two multidisciplinary research efforts involving many other MCOHS faculty and students: 1) an investigation of health issues related to exposures in the taconite mining industry, including an assessment of risk factors associated with 63 cases of Mesothelioma and a cohort mortality assessment of 68,000 former miners. Through cross-sectional screening, it also involves assessing existing exposures in current and former miners and their spouses (Drs. Mandel and Perlman, Co-Investigators). A comprehensive exposure assessment is underway in conjunction with these studies, which includes the assessment of near-nano sized particles (Dr. Ramachandran). The human health studies are being conducted as part of a collaborative undertaking with the University of Minnesota Natural Resources Research Institute (NRRI), a geological unit based at the Duluth campus, and the School of Engineering's Particle Technology Laboratory, involving seven MCOHS, School of Public Health and Medical School faculty, numerous professional staff, six graduate students and five NRRI faculty; 2) an assessment of a reported brain cancer excess within the research facility of a major company which involves a research cohort mortality assessment (Drs. Alexander and Mandel, Co-PIs). The brain cancer investigation is also a multidisciplinary effort, involving graduate students and faculty with backgrounds in occupational medicine, epidemiology, industrial hygiene and biostatistics. Program faculty published 11 papers during this academic year; several additional papers are under review. OEM residents and faculty delivered over 109 presentations, including many that involved outreach activities.

Occupational Health Services Research and Policy Program (OHSRP): Patricia M. McGovern, PhD and Bryan Dowd, PhD, Co-Directors (Enrolled students: 6 PhD; Graduates: 0 PhD) The Divisions of Environmental Sciences (EHS) and Health Policy and Management (HPM), School of Public Health, offer this joint doctoral-level education program with the goal to prepare doctoral students with expertise in both occupational health and safety, and health services research and policy. Research efforts by faculty and students led to 29 presentations in academic and professional meetings and 32 peer-reviewed publications; additionally, eight are in press and 10 in review. Faculty and students received several awards: Student Genelle Lamont - *William Randolph Hearst Endowed Scholarship*, School of Public Health (tuition and stipend for 2009-2010). Professor Dowd was re-appointed to a second three-year term as Chair of the Methods Council, AcademyHealth. In 2008-2009, he taped two webinars for the association: "Causality in HSR, Part I: An Introduction to Causal Concepts" and "Causality in HSR, Part II: Estimation Techniques for Causal Modeling." These webinars, explore multidisciplinary perspectives on causal modeling and offer practice advice for estimating causal models in Stata and LIMDEP, and are available to students and faculty worldwide through AcademyHealth. Professor McGovern was appointed to the Executive Steering Committee of the National Children's Study (NCS) and selected as Co-Leader of a Collaborative Improvement

Network developed by UCLA to pilot test an alternative recruitment strategy for the NCS. Professor Blewett was elected as a member of the Governing Board, AcademyHealth, and appointed by HHS Secretary Leavitt as a member of the Board of Scientific Counselors, National Center for Health Statistics, CDC, 2007 – Present. Professor Forster was invited as a member of the Tobacco Research Network on Disparities, funded by the National Cancer Institute, American Legacy Foundation, and as a contributing author for the upcoming Surgeon General's Report on Smoking.

Occupational Injury Prevention Research Training Program (OIP RTP): Susan G Gerberich, PhD and Bruce Alexander, PhD, Co-Directors (Enrolled students: 1 MS/PhD, 5 PhD; Graduates: 2 PhD) This program rigorously trains doctoral-level academicians and researchers to provide leadership in reducing the burden of occupational injury through teaching, research, and translation of research to practice. The faculty has been funded for numerous research efforts (a minimum of 31) that provide multidisciplinary research-training opportunities for students, resulting in national and international professional publications (n=69 total; students = 28 [41%]), presentations (n=57 total; students = 15 [27%]), and R2P efforts. R2P efforts include: 1) Identification of risk factors for work-related physical assault against teachers/educators that are important in application of relevant interventions. Dissemination through peer-reviewed publications and presentations to key professional groups is integral to development of appropriate interventions. 2) Studies among agricultural household members on both agriculture and non-agriculture-related injuries, in five upper Midwest states, identified not only incidence and consequences of these injuries for all ages – but, also risk factors for agriculture-related injury among children; results have served as a basis for development of intervention efforts and dissemination to key professionals as well as the agricultural community. 3) Results of Leslie Nordgren's doctoral study ("Etiology and Consequences of Injuries to Veterinary Technicians") are being distributed to Minnesota veterinarians and are being included in the fourth year curriculum for University of Minnesota veterinary students to increase their awareness of risk factors for injury to the veterinary staff. Our research seminars, informal meetings and social interactions, involving OIP RTP students and those from several other MCOHS disciplines, are essential to the camaraderie that facilitates successful progress. Doctoral students, Deborah Merchant Langner and Leslie Nordgren, graduated in August and November 2009, respectively. **Student Awards**, included: Chia Wei, *Nancy A. Robertson Endowed Graduate Fellowship in Injury Prevention*; Katherine Schofield, *Safety Memorial Scholarship* - Associated General Contractors of Minnesota, 2009 (based on academic standing; career objectives); Christopher Drucker, *University of Minnesota School of Public Health Medical Scholarship*.

Hazardous Substances Academic Training (HSAT) Program: Peter Raynor, PhD, Director (Enrolled students: 4 MPH, 2 MS; Graduates: 1 MPH, 1 MS) The HSAT Program faculty and students collaborated on five peer-reviewed publications and eight research-oriented presentations in a range of venues. Dr. Raynor received a new NIOSH R01 grant to study the use of sprays to control hazardous dusts in underground mines. He completed a project in which he and recent HSAT MPH graduate Jessica Ingraham investigated the potential for nanocomposite plastics to generate harmful nanoparticle aerosols during recycling of the plastic; this work is being prepared for publication. Dr. Raynor also helped to teach solid waste employees at the Leech Lake Reservation in Bena, MN about hazardous waste handling and transportation. Dr. Brosseau is Vice-Chair of the American Conference of Governmental Industrial Hygienists (ACGIH) Board of Directors. She continues to serve on committees and make educational presentations to increase the perception of need for proper respiratory protection for those working with hazardous infectious materials. Dr. Brosseau continues a project to measure the ability of different types of packaging to contain mercury vapor from broken fluorescent bulbs as they are shipped for recycling; HSAT MS graduate Tracy Glenz and current IH Masters student Maren Korpela have worked with Dr. Brosseau on this research.

Continuing Education and Outreach (CE) Program, Hazardous Substances Training Continuing Education (HST-CE) and Agricultural Safety and Health Continuing Education (ASH-CE): Ruth Rasmussen, MPH, MS, RN, Director; TOTAL for 3 Programs, CE, HST-CE, and ASH-CE = 103 courses involving 3,815 participants [1,919 participants in online modules awarding CE credit; 1,896 in-person course participants] representing occupational health and safety professionals across disciplines. The CE Program includes the HST-CE and ASH-CE programs. HST-CE trainings and participants increased for two years in a row; the ASH-CE program created new partnerships in migrant health and public health nursing provider trainings. The CE Program continued to expand its relations with the Wisconsin State Association of Occupational Health Nurses and the local chapters of the American Industrial Hygiene Association and the American Society of Safety Engineers by co-sponsoring training opportunities at annual professional development events. *Geographically, all three CE programs extended to 47 states, including Minnesota and regional states of North Dakota, South Dakota and Wisconsin, and 87 countries.*

Summary: The Midwest Center for Occupational Health and Safety continues to be highly productive and provides important contributions to the nation's workforce safety and health. Innovative research strengthens visibility of the MCOHS at the regional, national, and international levels and provides a basis for translating research to practice. Excellent quality interdisciplinary academic and research programs, recognized globally, provide a strong foundation for student training and novel continuing professional education and outreach efforts that serve the needs of a diverse workforce in the Midwest.